



3dm3p	.....	VSPRMGLLS	QTVI	DA	LIFL	POTR	PAGVFE	QIHSFGGPG	GPAGPSPCS	ARL	.....	PC	RLFFRVCLKP	GLSEEAES	QALGAA	SAR	GPVYT	91			
moused113p	checks	sum	LS	QTL	ILAF	LL	QALPACVFE	QIHSFGGPG	QGTSPSPCN	ARG	.....	PC	RLFFRVCLKP	GVSQEATESL	QALGAA	LSTS	VPVYT	97			
hdel1alp	.....	GSRCALALAV	LSALL	COVW	.....	SSGVFE	UKLQDEFVNKK	GLLGUNCCR	GGAGPPPCAC	RTIFFRVCLKH	YQASVSPEPP	QTYGS	AVTPV	LGWDS	91						
w80813	.....	ma	agrs	agwa	1	..	lvalwq	qraagsv	fvf	lql	definer	gv1	.....	asgrpcep	gbl	dt	fgt	vstpv	lgtns	88	
3dm3p	EDPGAPADL	PLPDGLLQVP	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	193	
moused113p	EHGESAAAL	PLPDGLVRVP	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	FRDAMP	GTFS	199	
hdel1alp	FSLPDGGGAD	SAFSNP	IRFP	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	MPGTFS	FGFT	194	
w80813	favrdssgg	g	..	rnplq	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	190	
3dm3p	RSAP	.....	S	RCGP	Q	RP	CA	PLEDE	.....	S	VRAG	SP	.....	SP	.....	SP	.....	SP	.....	SP	261
moused113p	RSAP	.....	S	RCGP	Q	RP	CA	PPCT	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	217
hdel1alp	RDDAFGHFTC	GERGEKVCNP	GWKGP	VC	TEP	ICL	PG	DE	EQH	GF	DN	K	PE	CK	CR	VM	GR	YC	DECIR	VP	GC	299
w80813	trndh	fghyvc	qpdgr	l	sc	l	p	gwt	g	vc	qqp	id	l	sg	heq	id	l	sg	heq	id	l	295
3dm3p	ATTG	QL	VP	GP	GP	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	346
moused113p	ASTG	QL	LP	GP	GP	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	356
hdel1alp	NGAT	Q	NTG	GP	GS	Y	T	C	S	R	P	G	Y	T	C	S	R	P	G	Y	T	402
w80813	ngat	csnsg	rsyt	ctcrpg	ytg	v	d	c	e	l	l	l	l	l	l	l	l	l	l	l	l	399
3dm3p	EKR	VDRCS	Q	P	Q	NG	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	447	
moused113p	EKR	VDRCS	Q	P	Q	NG	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	CLD	457	
hdel1alp	EKK	J	Y	C	S	P	C	S	N	G	A	K	Q	Q	Q	Q	Q	Q	Q	Q	Q	503
w80813	ekkv	dr	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	504	

Fig. 1A

3dm3p	VCACAPGYNG	ARCEFPV	HPDGA	SALPA	APPGLRPGDP	QRYLLPPALG	LLMAAGVAGA	ALLVIVRRR	GHSQDAGSRL	LAGTPEPSVH	ALPDALNNL	543
moused113p	VCACAPGYNG	VRCEFAV	RPDGA	DAVPA	APRGLROADP	QRFLPPALG	LLMAAGTAGA	ALLVIVRRR	GPGQDTGTRL	LSGTREPSVH	TLPDALNNL	553
hdel1alp	VCACAPGYNG	PNQFLPEL	PPGPA	AVDLT	EKLEGQGGP	PWAVACAGVI	LLMLLLGC	AAVWCVRLR	LQHR	PPADPCR	GETETMNNLA	NCORE
w80813	VCACAPGYNG	srcefpv	g1	pas	.....	f	pwavav	g1	q1r	.....	ednnls	dfqkd
3dm3p	.....	RTQEGS	GDGPSSVDW	NRPEDVDPOG	IYVISAPSIY	AREA	.....	.....	.....	.....	.....	583
moused113p	.....	RLQDGA	GDGPSSVDW	NHPEDGDSRS	IYVIPAPSIY	AREA	.....	.....	.....	.....	.....	593
hdel1alp	KDISVSIIGA	TOIKNTNKKA	DFHGDHSADK	NGFKARYPA	VDYNLVODLK	GDOTAVRDAH	SKRDTKCOPQ	GSSGEEKGTP	TTLRGGEASE	RKRPDGCGST	SKDTK	703
w80813	n	.....	lipa	aq1krt	hqkk	e1evdcg1dk	sncgkqanht	ldyn1abp1	g1gt	.....	mpgkfphs	dkslgeka.p
3dm3p	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	583
moused113p	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	593
hdel1alp	YQSVYVISEE	KDECVIATEV	723	.....	.....	.....	.....	.....	.....	.....	.....	665
w80813	yqsvclisee	rrecviatev	685	.....	.....	.....	.....	.....	.....	.....	.....	665

Fig. 1B

3md3	ATGGTCTCC	CACGATGTC	GGGATCTCT	TCGAGAGATG	TGATCTTAC	GCTCATTTTC	CTGGCCGAGA	QACGGCCGAG	TGGGGTCTTC	GAGCTGCAGA	TCCAC	105
moused113n	ATGGTCTCT	TGCAGTGTG	...TCCGCTT	TCGAGAGATG	TGATCTTAC	...TTCCTTC	CTGGCCGAGA	QACGGCCGAG	TGGGGTCTTC	GAGCTGCAGA	TTCAT	99
hdel1aln	.....	ATGGG	DAGTGGGTG	GGGATCTCT	TGATCTTAC	CTGGCCGAGA	CTGGCCGAGA	QACGGCCGAG	TGGGGTCTTC	GAGCTGCAGA	TGCAG	90
w80813n	ATGGGCTCT	CGTCCCGAG	GGGCTCTGG	GGGCTCTGG	TGATCTTAC	GGGCTCTGG	GGGCTCTGG	GGGCTCTGG	GGGCTCTGG	GGGCTCTGG	TGCAG	105
3md3	TCCTTCGGG	CGGCTCAGG	CCCTGGGGG	CCGCTGGG	CCCTGGG	.....	CCGCTGGG	CCCTGGG	CCCTGGG	CCCTGGG	TGCAG	195
moused113n	TCCTTCGGG	CAGGCTCAGG	CCCTGGG	CCGCTGGG	CCCTGGG	.....	CCGCTGGG	CCCTGGG	CCCTGGG	CCCTGGG	TGCAG	189
hdel1aln	GAGTTCGTCA	ACAAGAAGG	GCTGCTGGG	AACGCAAGT	GCTGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	195
w80813n	gagttcatca	acgagcagc	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	TGCAG	189
3md3	CTGGGCTCT	DAGAGAGAG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	300
moused113n	CTGGGCTCT	CCAGAGAGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	294
hdel1aln	CACTACAGG	CCAGAGAGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	300
w80813n	gagttcatca	acgagcagc	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	gagttcatca	TGCAG	289
3md3	CTGGGCTCT	CCAGAGAGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	405
moused113n	CTGGGCTCT	CCAGAGAGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	399
hdel1aln	GACTGCGCT	TCAGGAGCC	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	405
w80813n	.....gcgggg	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	TGCAG	387
3md3	GGAGGGCCG	CCCTGG	.....	AGGCTG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	501
moused113n	GGAGGGCCG	CCCTGG	.....	AGGCTG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	495
hdel1aln	GGAGGGCCG	CCCTGG	.....	AGGCTG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	GGGCTGGG	TGCAG	504
w80813n	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	ggcggaacc	TGCAG	492
3md3	TGGAGCTGC	CTGCTCTGA	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	TGCAG	606
moused113n	TGGAGCTGC	CTGCTCTGA	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	TGCAG	600
hdel1aln	ACGAGCTCA	AGTACTCTA	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	CCGCTGGG	TGCAG	609
w80813n	acaagcctgc	gctactctta	ccggtcatc	ccggtcatc	ccggtcatc	ccggtcatc	ccggtcatc	ccggtcatc	ccggtcatc	ccggtcatc	TGCAG	597

Fig. 3A

3md3	GGAGTGGGCG	CCTGGGCACC	GGTGT	G	AGGAAGCA	A	TGGGTGTGCT	GAGCAGGCTG	CAGCCCTGAG	CATGGCTTCT	GTGAA	684
moused113n	GGAGTGGGAC	CCTGGGACCC	ATTGT	C	CAGACGATG	CGAAGCCCG	TGTGTGTGTC	GACGAGGCTG	CAGCCCTGAG	CAGCCCTGAG	CATGGCTTCT	GTGAA	690
hdel1aln	TGTGGGGAGG	GTTGGGAGAA	AGTGTGCAAC	CCTGGCTGGA	AAGGGCCCTA	CTGCACAGAG	CGGATGTGCC	TGGGTGTGTC	TGATGAGGAG	CATGGGCTTCT	CATGGGCTTCT	GTGAC	714	
w80813n	tggcagacag	atggcaactt	gtcctgacctg	cccgttgga	ctggggaata	ttgccaacab	cdtatbctgc	tttgggagctg	tcattgaacag	aatggcctact	gcagc		702	
3md3	CAGCCCGGTG	AATGCCGATG	CCTAGAGGGC	TGGACTGGAC	CCCTCTGCAC	GGTCCCTGTC	TCCACGAGCA	GCTGCTCTAG	.....	.....	.....	.....	765
moused113n	GAGCCTGATG	AATGCCGATG	CCTAGAGGGC	TGGACTGGAC	CCCTCTGCAC	GGTCCCTGTC	TCCACGAGTA	GCTGCTCTGAA	.....	.....	.....	.....	771
hdel1aln	AATCCAGGGG	AATGCCGATG	CCTAGAGGGC	TGGACTGGAC	CCCTCTGCAC	GGTATCTGA	CGGATCTCAG	GCTGTCTCCA	TGGCACCCTGC	CAGCAGCCCT	GGCAG		819	
w80813n	agccagacab	adggcctctg	cgccacagcc	tggcagggcc	ggctctctga	cgaatgcatg	ccccaatg	gctgtgagca	gggcacctgc	agcactcct	ggcaa		807	
3md3	.....	.....	.....	CCC	AGGGGCGGT	CTCTCTGTAC	CACGCGATGC	CTTGTGTC	.....	.....	.....	.....	804
moused113n	.....	.....	.....	TCC	AGGGTCTGT	CTCTCTGCAC	CAGTGGATGC	CTTGTGTC	.....	.....	.....	.....	810
hdel1aln	TGCAACTGCC	AGGAAGGCTG	GGGGGGCCTT	TTCTGCAACC	AGGAAGGCTG	CTACTGTGACA	CACGATGAGC	CGTGTGAAGAA	TGGAGCCACC	TGCACCAACA	CGGGC		924	
w80813n	tgtacttgtg	atgaggctg	gggaggctg	ttttgtgacc	agatgtgaa	ctactgacc	cacgactcc	gatgcagaa	tggggcaacg	tgctccaaca	gtggg		912	
3md3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	855
moused113n	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	861
hdel1aln	CAGGGGAGCT	ACACTTGTCT	TTGGGGGCTG	GGGTACACAG	GTGCCACCTG	CGAGTGGGG	ATTCAGGAGT	GTGACCCGAG	CCCTTGTAA	AAAGGAGGGA	GCTGC		1029	
w80813n	cagcgaagct	acactgtgac	ctgtcgcca	ggctacactg	gtgtgactg	tgaggtgag	gtcagcgagt	gtgagagca	ccctgtgctg	aatggagagca	gctgt		1017	
3md3	AGTGAGACAC	CCAGGTCTTT	TGAATGCACC	TGCCCCGCTG	GGTTCACGG	GCTTGGGTGT	GAGGTGAGCG	GGGTGACATG	TGGAATGGA	CCCTGCTTCA	ACGGC		960	
moused113n	AGTGAAACCT	CTGGCTCTTT	TGAATGTGCT	TGCCCCGCTG	GGTTCACGG	GCTTGGGTGT	GAGGTGAGCG	GGGTGACATG	CGGAATGGA	CCCTGCTTCA	ATGGC		966	
hdel1aln	ACGGATCTCG	AGAACAGCTA	CTCCTGTACG	TGCCCCGCTG	GGTTCACGG	GCTTGGGTGT	GAGGTGAGCG	GGGTGACATG	TGGAATGGA	CCCTGCTTCA	ATGGC		1134	
w80813n	agggaccagg	aggatggcta	cdactgctg	tgctctgctg	gcttactatg	cdactatg	gagacagca	cdttgagctg	gggagagctg	ccctgcttca	atggg		1122	
3md3	GGCTTGTGTG	TGGGGGTG	AGACCTGAC	TGTGCTTACA	TCTGCACTG	CCCACTGTGT	TTCAAGGCT	CCAACCTGTA	GAAGAGGCTG	GACCGGTGCA	GCTTG		1065	
moused113n	GGCTTGTGTG	TGGGGGTG	AGACCTGAC	TGTGCTTACA	TCTGCACTG	CCCACTGTGT	TTCAAGGCT	CCAACCTGTA	GAAGAGGCTG	GACCGGTGTA	GCTTG		1071	
hdel1aln	GGTGGGTGCT	CAGACAGCCC	CGA...TGGG	G...TGGG	G...TGGG	G...TGGG	G...TGGG	G...TGGG	G...TGGG	G...TGGG	G...TGGG		1233	
w80813n	ggctctgctg	gggagggcaa	caa...ggg	ggg	ggg	ggg	ggg	ggg	ggg	ggg	ggg		1224	

Fig. 3B

3md3	GACCCATGCC	GGAATGGGG	AGCTTGCTG	GACCTGGGG	AGCCCTGGG	GTGCCGCTGG	CGCGCGGGCT	TGCGGGGTCC	TGGCTGGAG	CAGGACCTGG	ACGAG	1170
moused113n	GACCCATGTC	AGAAATGGGG	AGCTTGCTG	GACCTGGGG	AGCCCTGGG	GTGCCGCTGG	CGCGCGGGCT	TGCGGGGTCC	TGGCTGGAG	CAGGACCTGG	ACGAG	1176
hdel1aln	TACCCCTGTT	CTAAATGGGG	CAAGTGTGG	GACCTGGGG	AGCCCTGGG	GTGCCGCTGG	CGCGCGGGCT	TGCGGGGTCC	TGGCTGGAG	CAGGACCTGG	ACGAG	1338
w80813n	aaacccctctg	caaaaggggg	aaagtgcctg	aaacggaggtg	aaagggagcat	gtggccctgcg	cgctcgtggat	tcacggggcag	ctactgtgaa	gttcacgggtca	gcgag	1329
3md3	TGGCGGGGGC	GCGCTGGGG	TAAAGGGGG	AGCTTGCTG	AGGGGGGGG	CGGGGACCGG	TGGTCTCTGG	CGGTGGGCTT	TGGGGGGGGC	GACTG	CCGC	1269
moused113n	TGGCGGGGGC	GCGCTGGGG	CAACGGGGG	AGCTTGCTG	AGGGGGGGG	CGGGGACCGG	TGGTCTCTGG	CGGTGGGCTT	TGGGGGGGGC	GACTG	CCGA	1275
hdel1aln	TGGCGGGGGC	GCGCTGGGG	CAACGGGGG	AGCTTGCTG	AGGGGGGGG	CGGGGACCGG	TGGTCTCTGG	CGGTGGGCTT	TGGGGGGGGC	GACTG	CCGA	1437
w80813n	tggtgccgta	acggttgccc	gdacgggtggc	adttggcath	acctggagaa	tggtgctgatg	tgacactgc	gtgccggctt	gtctggccga	cgctgtgagg	tgccg	1434
3md3	GAGCGGGGGG	AGCGGTGGG	GCGCGGGGG	TGTGCTGAG	GCGCGGGGG	CTACGGCGAG	TTCCTG	CGGGCTGGT	GTGCGCTGG	GCTCCGGCT	AGATG	1368
moused113n	GAGCGGGGGG	AGCGGTGGG	GCGCGGGGG	TGTGCTGAG	GCGCGGGGG	CTACGGCGAG	TTCCTG	CGGGCTGGT	GTGCGCTGG	GCTCCGGCT	AGATG	1374
hdel1aln	GCGCGGGGGG	AGCGGTGGG	GCGCGGGGG	TGTGCTGAG	GCGCGGGGG	CTACGGCGAG	TTCCTG	CGGGCTGGT	GTGCGCTGG	GCTCCGGCT	AGATG	1536
w80813n	acatccatctg	atggctctg	gtggaggtccg	gtggaggtccg	gtggaggtccg	gtggaggtccg	gtggaggtccg	gtggaggtccg	gtggaggtccg	gtggaggtccg	gtggaggtccg	1539
3md3	GAGCGGGGGG	AGCGGTGGG	GCGCGGGGG	TGTGCTGAG	GCGCGGGGG	CTACGGCGAG	TTCCTG	CGGGCTGGT	GTGCGCTGG	GCTCCGGCT	AGATG	1473
moused113n	GAGCGGGGGG	AGCGGTGGG	GCGCGGGGG	TGTGCTGAG	GCGCGGGGG	CTACGGCGAG	TTCCTG	CGGGCTGGT	GTGCGCTGG	GCTCCGGCT	AGATG	1479
hdel1aln	GCGCGGGGGG	AGCGGTGGG	GCGCGGGGG	TGTGCTGAG	GCGCGGGGG	CTACGGCGAG	TTCCTG	CGGGCTGGT	GTGCGCTGG	GCTCCGGCT	AGATG	1640
w80813n	ggcagccgctg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	ggcaggtccg	1592
3md3	GCTGTGGGAG	TGCTGTGGG	GCGGGGGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	1578
moused113n	GCTGTGGGAG	TGCTGTGGG	GCGGGGGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	1584
hdel1aln	GCTGTGGGAG	TGCTGTGGG	GCGGGGGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	GCTGTGGG	1745
w80813n	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	gctgtgctg	1688
3md3	GCGACCGGGG	AGCCGTGAGT	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	1683
moused113n	GCGACCGGGG	AGCCGTGAGT	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	1689
hdel1aln	GCGACCGGGG	AGCCGTGAGT	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	CCACCGGGG	1847
w80813n	cagc	agggagag	ccatgagag	ccatgagag	ccatgagag	ccatgagag	ccatgagag	ccatgagag	ccatgagag	ccatgagag	ccatgagag	1766

Fig. 3C

3md3	CTTGAAGATTG	TAGACCTTCA	AGGCAATTAT	GTGATATCTG	CTGCTTTCCAT	CTAGGCTGGG	GAGGCTTGA	1752
moused113n	CTTGAAGATTG	GAGACTCTAG	ATCCAATTAT	GTGATATCTG	CCGCTTTCCAT	TTATGGACGA	GAGGCTTGA	1758
hdelta1n	GAAGAAGGCG	GACTTCCACG	GGGACCAACG	CGCCGACAAAG	...AATGGCT	TCAGGCTCG	CTACCCAGCG	1949
w80813n	CTAGAAGATTG	GAGCTGGAAG	tggaactgtg	ggaacacaca	ttggactata	atctggcccc	agggccccctg	1868
3md3	.....	.....	.....	.....	.....	.....	.....	1752
moused113n	.....	.....	.....	.....	.....	.....	.....	1758
hdelta1n	CGACACCGCC	GTGAGGGAGG	CGCACAGCAA	GGGTGACACC	AAGTGCCAGC	CCAGGGGCTC	CTCAGGGGAG	2054
w80813n	.....	gcgggggacc	atgccaggaa	agtttcccca	cagtgcacag	agcttaggag	agaaggcgcc	1954
3md3	.....	.....	.....	.....	.....	.....	.....	1752
moused113n	.....	.....	.....	.....	.....	.....	.....	1758
hdelta1n	AGCATCTGAA	AGAAAAGGC	CGGACTCGGG	CTGTTCAACT	TCAAAAGACA	CCAAGTACCA	GTGCGGTGTAC	2159
w80813n	.....	agtgtc	ggatatcagc	gatgtgctcc	ccaggagact	ccatgtacca	gtctgtgtgt	2045
3md3	.....	.....	.....	.....	.....	.....	.....	1752
moused113n	.....	.....	.....	.....	.....	.....	.....	1758
hdelta1n	AACTGAGGTG	TAAATGGAA	GTGA	2183				
w80813n	cacggaggta	.....	.....	2055				

Fig. 3D